

Progress Report on Optimizing X-ray Optical Prescriptions for Wide-Field Applications

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We report on the present status of our continuing efforts to develop a method for optimizing wide-field nested x-ray telescope mirror prescriptions. Utilizing extensive Monte-Carlo ray trace simulations, we find an analytic form for the root-mean-square dispersion of rays from a Wolter I optic on the surface of a flat focal plane detector as a function of detector tilt away from the nominal focal plane and detector displacement along the optical axis. The configuration minimizing the ray dispersion from a nested array of Wolter I telescopes is found by solving a linear system of equations for tilt and individual mirror pair displacement. Finally we outline our initial efforts at expanding this method to include higher order polynomial terms in the mirror prescriptions.

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